



CLASS NOTES-ANSWERS

1. List the conditions under which combustion can take place.

Answer: The conditions under which combustion can take place are:

- The presence of air or oxygen
- The presence of fuel
- Ignition temperature is maintained.

2. Fill in the blanks.

a) Burning of wood and coal causes ----- of air

Answer: pollution

b) A liquid fuel, used in home is -----.

Answer: kerosene

c) Fuel must be heated to its ----- before it starts burning.

Answer: ignition temperature

d) Fire produced by oil cannot be controlled by -----.

Answer: water

3. Explain how the use of CNG in automobiles has reduced pollution in our cities.

Answer: CNG plays an important role in reducing pollution among automobiles for the following reasons:

- CNG is comparatively a cleaner fuel and leaves no residue on combustion.
- CNG is the least polluting fuel.



- CNG usually contains a few undesirable gases than the other fuels.
- It gives out less carbon dioxide gas, carbon monoxide gas and sulphur dioxide, which is beneficial, as they play crucial role in global warming, acid rain and many respiratory diseases.

4. Compare LPG and wood as fuels.

LPG	Wood
It does not cause pollution on combustion.	It pollutes air on its combustion.
It does not release smoke and other pollutants.	Wood produces a lot of smoke which pollutes the air.
It is a liquid fuel.	It is a solid fuel.
It is a cleaner fuel.	Usage of wood to a large extent causes deforestation.
It can be easily transported, as it is stored in cylinders.	Wood cannot be transported easily like LPG.
The fuel efficiency of LPG is more than that of wood. The calorific value of LPG is 55000 kJ/kg	The fuel efficiency of wood is less than that of LPG. The calorific value of wood ranges between 17000 and 22000 KJ/kg

5. Give reasons.

- a) Water is not used to control fires involving electrical equipment.

Answer: Water is a good conductor of electricity. If added to an



electrical fire, the water would just spread the electricity further. The person dousing the fire might get an electric shock.

b) LPG is a better domestic fuel than wood.

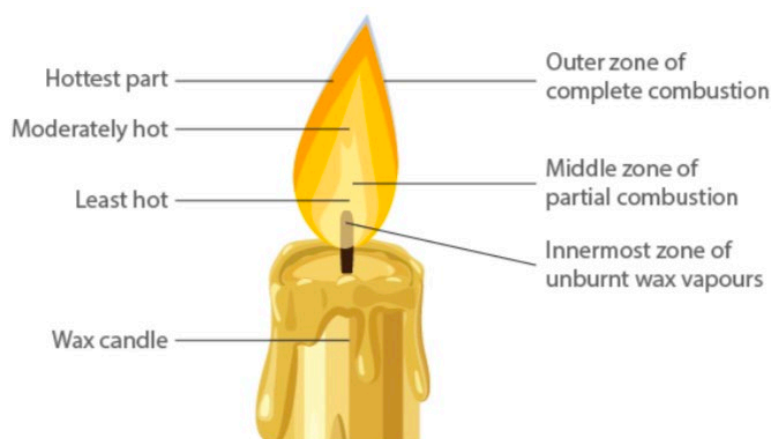
Answer: LPG being a cleaner fuel than wood, does not release smoke and other pollutants. Wood on the other hand, releases a lot of smoke and fumes polluting the atmosphere causing pollution and leading to respiratory diseases. The fuel efficiency of LPG is more than that of wood.

c) Paper by itself catches fire easily whereas a piece of paper wrapped around an aluminium pipe does not.

Answer: The paper by itself catches fire easily because of its low ignition temperature. The piece of paper wrapped around an aluminium pipe doesn't catch fire because the heat is transferred from the paper to the aluminium pipe, as aluminium is a good conductor of heat. This will result in an increase in the ignition temperature and hence, it does not catch fire.

6. Make a labelled diagram of a candle flame.

Answer:





7. Name the unit in which the calorific value of a fuel is expressed.

Answer: Fuel efficiency is expressed in terms of its calorific value which is expressed in units of kilojoule per kilogram [kJ/kg].

8. Explain how CO₂ is able to control fires.

Answer: CO₂ [carbon dioxide] is a non- combustible gas and extinguishes fire in two ways:

- It is heavier than oxygen and covers the fire like a blanket and cuts off the contact between oxygen and fuel.
- In cylinders, CO₂ is kept in the liquid form. When released, it expands enormously. This brings down the temperature of the fuel, which helps in controlling the fire.

9. It is difficult to burn a heap of green leaves but dry leaves catch fire easily. Explain.

Answer: A heap of green leaves contains a lot of moisture in it, hence its ignition temperature is high. Therefore, it does not catch fire easily. But dry leaves have no moisture content in them, hence their ignition temperature is low. Therefore, they catch fire easily.

10. Which zone of a flame does a goldsmith use for melting gold and silver and

why?

Answer: A goldsmith mainly uses non-luminous flame which is considered to be the outermost part of the flame. This part of the flame is used because the outermost flame undergoes complete combustion and is considered as the hottest part of the flame.



11. In an experiment, 4.5 kg of a fuel was completely burnt. The heat produced

was measured to be 180000 KJ. Calculate the calorific value of the fuel.

Answer:

Heat produced by 4.5 kg of fuel = 180000 kJ

Therefore, heat produced by 1 kg of fuel = $[180000/4.5]*1$ kJ/kg
= 40000 kJ/kg

Hence, the calorific value of the fuel is 40000 kJ/kg.

12. Can the process of rusting be called combustion? Discuss.

Answer: No. Rusting is the process in which iron reacts with oxygen and water to produce iron oxide [rust]. On the other hand, combustion is a chemical process in which a substance reacts with oxygen to release energy in the form of heat or light. Therefore, rusting cannot be called combustion.

13. Abida and Ramesh were doing an experiment in which water was to be heated in a beaker. Abida kept the beaker near the wick in the yellow part of the candle flame. Ramesh kept the beaker in the outermost part of the flame. Whose water will get heated in a shorter time?

Answer: The water placed in the outer most part of the flame will be heated in a short time since it is a non-luminous flame and is regarded as the hottest part of the flame. So Ramesh's beaker will be heated first.